

Abstract

Coal-based cellular products that can be custom designed to have integral stiffeners or load paths, directed heat transfer paths, and/or directed mass transfer paths and methods for their production are described. Such design and production is made possible by the appropriate selection of: starting materials, thermal treatment conditions and/or mold materials combined in at least some instances with segregation of different starting materials in different regions of a forming mold and/or the use of fibrous carbonaceous layers to obtain selected reinforcement to enhance bending and/or impact resistance. Carbon foams of a homogeneous composition comprising at least fibrous carbonaceous mat as a reinforcing element are also described.